Specification

# TRAVEL ASSISTANT DEVICE

# BACKGROUND OF THE INVENTION

## Field of the Invention

5    The present invention relates generally to personal devices for recording personal

experiences and providing personal instruction including translations of foreign

languages.

## Description of the Prior Art

Travelers have always needed the guidance of some local authority in order to

10    find their ways through foreign lands. There are traditionally native guides that can help

travelers find food and lodging as well as pointing out local attractions and points of

interest. As with any other field of human endeavor, certain of these guides may have

been found to be motivated by interests other than those which were best for the client, as

when some may serve to deflect tourists to establishments which hire the guides for this

15    purpose. It is also impossible for every guide to be uniformly well-informed and reliable.

As it is sometimes difficult to determine which of these guides may be trustworthy, some

travelers resort to packaged tours with escorts that shepherd groups of tourists about.

Other travelers may rely on tour books, which have the advantage of being at least

generally knowledgeable on a wide variety of subjects of local interest. However, they

are naturally mass produced, and therefore not tailored to any one individual, and certainly they are not interactive with the user, as a human guide would be.

Travelers have also become more and more fond of documenting their journeys, and tend to carry increasing numbers of still and video cameras, journals and log books 5 with them.

Travelers also often need the assistance of translators which can interpret the number of signs, menu listings, and printed materials they will encounter in their travels. Although there are computer programs that can be used to recognize optical characters, and even translate materials from one language to another, these currently require 10 equipment such as a flat-bed scanner, and a personal computer or at least a laptop computer to be effective, and are not well suited for a traveler, who may be having trouble just handling his or her luggage.

Thus, there is a need for a travel assistant device which combines many of these features in a compact unit, which can aid in translating printed material without bulky or 15 complicated equipment, which can be used to document a traveler's journeys and which can provide detailed instruction and commentary to aid the traveler on his way.

## SUMMARY OF THE INVENTION

A preferred embodiment of the present invention is a travel assistant device, which includes a hard disk drive including at least one database, a digital camera, a 20 microphone, a display screen, and at least one speaker. The hard disk drive is provided with database software by which images and sound input from the digital camera and the

microphone are stored in the hard disk drive as a personal log database. Images and sound files can be displayed on the display screen and through the speaker, and the personal log database may be updated by additional commentary and images as desired. The database software also retrieves downloaded database information which includes

5   images, sound files and text which act as a travel instructor. Also preferably included is a portable translator module.

The portable translator module uses the hard disk drive with a translation database. The digital camera inputs graphic images of words in a language unfamiliar to the user, and an Optical Character Recognition engine which resides on said hard disk

10   drive, takes input graphic images of words in a language unfamiliar to the user and converts them to characters in the unfamiliar language. A dictionary module then takes the characters generated by the Optical Character Recognition engine and produces translated files in a language familiar to the user, and outputs them to the user through the screen and speaker.

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It is an advantage of the present invention that it combines a number of devices in one package, so that there are fewer separate devices to handle while traveling.

It is another advantage of the present invention that a Hard Disk Drive device can carry significantly more information than a paper tour guide, and thus also minimizes the

20   numbers of items that a traveler must carry.

It is a further advantage of the present invention that by including a Global Positioning System, the user is allowed to get interactive information from digital guides, and may allow the user to be tracked or located if he becomes lost.

It is still another advantage of the present invention that it can provide translations of signs and printed matter by use of an internal dictionary and OCR functions, and new dictionaries or travel guides can be downloaded to match the location and circumstances of the traveler.

It is yet another advantage of the present invention that it can act as a personal log to record events of a user's travels in a digital form which can be uploaded to external memory devices or websites.

It is an advantage of the present invention that it can provide personalized directions and commentary for the instructions of the traveler, and can record additional commentary for the traveler.

These and other features and advantages of the present invention will no doubt become apparent to those skilled in the art upon reading the following detailed description which makes reference to the several figures of the drawing.

## IN THE DRAWINGS

The following drawings are not made to scale as an actual device, and are provided for illustration of the invention described herein.

Fig. 1 is a diagram of the travel assistant of the present invention used as a translator;

Fig. 2 is a block diagram of the functional blocks of the travel assistant;

Fig. 3 is a block diagram of the functional blocks of the travel assistant showing input, storage and output functional blocks;

Fig. 4 is a diagram of the functional blocks of the travel assistant when used in the translator function mode;

Fig. 5 is a block diagram of the travel assistant when used in the travel instructor function mode;

Fig. 6 is a diagram of the functional blocks of the travel assistant when used in the travel instructor function mode;

Fig. 7 is a block diagram of the travel assistant when used in the travel log function mode;

Fig. 8 is a block diagram of the travel assistant when used in the personal log function mode; and

Fig. 9 is a diagram of the functional blocks of the travel assistant when used in the travel log function mode.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the present invention is a digital travel assistant. As illustrated in the various drawings herein, and particularly in the view of FIG. 1, a form

of this preferred embodiment of the inventive device is depicted by the general reference character **10**.

Travelers to foreign lands have always needed the guidance of some local authority in order to find their ways. FIG. 1 shows a travel assistant **10** to store, reproduce and process personal data on demand during a trip. Generally, the travel assistant **10** includes a casing **12** into which is built a display or screen **14**, which is preferably an LCD display **16**. The travel assistant **10** also includes a digital camera **18** having a viewfinder **20**, and a microphone **22** and a speaker **24**.

FIG. 2 shows a block diagram of the internal functional blocks included within the travel assistant **10**. Central to all the functions is a Hard Disk Drive (HDD) **26.** It is to be understood that although an HDD is preferred, other direct access storage devices such as solid-state storage, MEMS storage, optical storage, magneto-optical storage, etc. could be used. A digital camera **18**, digital voice recorder **28**, and MP3 player **30** are included as well as an Optical Character Recognition (OCR) engine **32.** A data base **34** is included in the HDD **26** which includes database software **36.** Also resident on the HDD **26** are software applications for reporting **38**, which includes graphic image handling and formatting software, software for handling standard PDA functions **40** and dictionary and translation software **42**, which can be downloadable and thus customized to the country and location the traveler finds himself in. A Global Positioning System (GPS) module **44** is also preferably included. This GPS module **44** can be useful as it can be used to allow the user to get interactive information from digital guides, and may allow the user to be tracked or located if he becomes lost.

FIG. 3, with reference also to Fig. 1, shows a block diagram of various input and output types and formats which are input to the HDD **26** and its internal database **34**. As input, voice **50** or sound can be input through the microphone **22**. Images **52** can be input

5    through the digital camera **18**. Digital music **54** can be input through a number of input ports (not shown) which include all the conventional input sources such as by cable or wireless communication, or through a CD drive or player (also not shown). Software utilities **56** can also be downloaded through an access port or through a CD drive. Once data has been input, it can be manipulated through any number of software utilities, so

10   that the files can be formatted or converted to other compatible formats for storage or output.

Output files and formats can include various types of graphic and text files **58**, which are retrieved from a searchable database **34**. HTML pages **60** can also be sent to the internet after an internal software utility (not shown) stored in the HDD **26**, such as an

15   HTML editor, has been used to format and mount the graphic image **52** and sound files received by the travel assistant **10**. These could be presented as updates to a personal web site displaying "How I Spent My Summer Vacation", etc.

Also available for output are MPEG movie files **62**, digital image and sound files **64** of various formats including voice data, and it is also possible that these files be

20   included in the web pages **60** or that the web pages contain links to locations on a server after they have been uploaded from the travel assistant **10**.

The output is done through several methods. The sound files such as voice **64** and digital music **56** can be output through the built-in speaker **24** and digital images **64** and MPEG movies **62** can be shown on the screen **14** which is preferably an LCD display **16**. These files can also be output through conventional, ports such as USB ports, etc. or

5    modems, of either cable or wireless type.

With continuing reference to Figs. 1-3, an example is given of the function of the travel assistant **10** as a portable translation device **100**. It is assumed that the user is an English speaker traveling to Japan, and the user has downloaded software specific to this country, which could be obtained from a provider such as "Lonely Planet" or

10   "Frommers", and which includes a Japanese/English Dictionary as an example of dictionary software **42**, discussed above. In this function, the digital camera **18** is used to photograph a sign containing Japanese characters **102**. These are input as digital images **52** and stored either on the hard drive **26**, or in a temporary memory storage as a graphic image file, in one of several formats, i.e. JPEG, TIFF, etc. In response to a prompt from

15   the travel assistant **10**, the user may designate whether the graphic file is to be stored in the database **34**, or whether it is to be operated upon by one or more of the software applications **56** which have been loaded in the HDD **26**. A choice is then input by the user by an input device, such as a touch screen button or buttons (not shown). In this example, in response to a query presented by the travel assistant's software, the graphic

20   image **52** is sent to an OCR engine **32**, which matches the graphic image **52** to a character **102**, and a slide **104** matching the character **102** is shown on the screen **14**. The slide **104** preferably displays the translation **106**, and a pronunciation **108**. In addition, a sound file

**64** corresponding to the sound of the spoken character is optionally retrieved and played through the speaker **24**. The sound file **64** which is played may include commentary on various items of interest or concern such as inflection, proper usage depending on social situation, or regional variance, etc.

5        Fig. 4 shows a block diagram of the elements of the travel assistant **10** in use as a translation device **100**. An image **52** enters the objective lens **66** of the digital camera **18**, and activates a Charge Coupled Device (CCD chip) **68** before the image data is stored in a device RAM memory **70**. This sequence of events can be referred to collectively as initiating a request **72** for translation. It is possible that a touch screen button (not shown)

10    has previously be activated to initiate this series of events and to identify that the image is to be used for translation purposes rather than for adding to the personal log function, or some other identifier has been used, as is known in the art.

       The image data **52** held in Ram **70** is then introduced to the OCR software **32** and compared to internal dictionary software **42**, which produces a match with the characters

15    in the image **52**, and retrieves corresponding translated image **74** and voice files **76**, which are delivered to a second device RAM memory **78**. The translated image files **74** are delivered to the display screen **16**, and text is processed by a text-to-speech engine **82**, which produces a translated sound file **76** which is then delivered to the speakers **24**.

       Thus, the characters **102** produce a request **72** to be translated which produces a

20    reply **80**, which includes image files **74** such as a slide **104**, which could contain English word translations **106**, with phonetic pronunciation information **108**, or could produce pictures. The speaker **24** can then play back the sound files **76**.

Figures 5-6 show the travel assistant **10** being used as a travel instructor device **200**. When elements or functional blocks are similar to those previously described, the same element numbers will be used in the following description.

When used as a travel instructor device **200**, a database **202** is accessed for specific information about the travel's present or intended location, or to give directions or commentary to the travel. The travel instructor device **200** can be activated by commands entered through a touch-screen **84** which presents various options to the user. One possible scenario involves the user's planned visit to a friend "Jack" who lives in Japan. Jack may have sent prerecorded instructions and directions to his house, which have been stored in a database #26 on the traveler's HDD **26**. When the traveler arrives in the appropriate city in Japan, she may access database #26 by the touch-screen display **84**, which sends a query **86** to the central processor **88**, which is stored in device RAM memory **70** until the database software **36** retrieves the appropriate database **34**, in this case database #26 **202**, which includes images, voice and text information included on digital image and voice files **64**. These files **64** are sent to device RAM memory **78** where image **52** and voice **92** data are sent to the display screen **14** and speakers **24** respectively, or certain text files **90** may be sent to the text-to-speech engine **82** for processing into voice files **92** which are then sent to the speakers **24**.

Thus, Jack's directions could include an image of a local landmark **204**, with his pre-recorded comment **206** "Turn right at this red shrine and go towards the book store..." The travel assistant's recording function through the microphone **22** and digital camera **20** also allows the traveler to add extra comments **208**, perhaps for future

reference, such as "This shrine isn't red!" These comments and images can be added to the database #26 **202** and stored on the HDD **26**.

Figures 7-9 show the travel assistant **10** being used as a travel log or personal log device **300**. When elements or functional blocks are similar to those previously

5      described, the same element numbers will be used in the following description.

Referring now primarily to Figure 9, when used as a personal log device **300**, the digital camera **18** and microphone **22** are used for logging **302** information to the HDD **26**. Images **52** enter the objective lens **66** of the digital camera **18**, and activates a Charge Coupled Device (CCD chip) **68** before the image data is stored in a device RAM memory

10     **70**. This sequence of events can be referred to collectively as logging information **302**. As before, it is possible that a touch screen button (not shown) has previously be activated to initiate this series of events and to identify that the image is to be used for logging purposes.

The digital image and voice files **64** are sent to the HDD **26**, where database

15     software **36** routes the data to the database **34**, which is specifically a logging database **304**. The data is stored there until retrieved and the digital image and voice files **64** are called to be played back. If so, these files **64** are sent to device RAM memory **78** where image **52** and voice **92** data are sent to the display screen **14** and speakers **24** respectively, or certain text files **90** may be sent to the text-to-speech engine **82** for processing into

20     voice files **92** which are then sent to the speakers **24**.

Alternately, the digital image and voice files **64** can be exported **306** either to another external device, or to the web **308** in the form of digital image and voice files **64**, or MPEG movies **310**.

Figure 7 shows one example, where elements of a prerecorded database #26 **312** are recalled, and new images **314** and commentary **316** are added by the traveler to the prerecorded commentary **318** provided by the database **312**.

Figure 8 shows another example where a personal database #123 **320** has previously been established and stocked with images **314** and sound files recorded by the traveler. Previously recorded comments **322** can be recalled and then new commentary **316** added, as the original material is reviewed.

While the present invention has been shown and described with regard to certain preferred embodiments, it is to be understood that modifications in form and detail will no doubt be developed by those skilled in the art upon reviewing this disclosure. It is therefore intended that the following claims cover all such alterations and modifications that nevertheless include the true spirit and scope of the inventive features of the present invention.